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Determining the suitable soil moisture limit to allow the logging machines to operate using Fro-Pro software (Case study: Kheirood Kenar forest)

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Abstract

It is usual to see destructive effects in forest soil such as soil compaction, wheel and log tracks in forest utilization operations after using skidders. Soil weight moisture is one of the factors effective in soil destruction. The more this moisture is, the more the soil is destroyed. Soil destruction and disturbance is the least if the soil weight moisture is in optimum. So in order to decrease the soil destruction it is necessary to determine a threshold. Using For-Pro software the soil moisture threshold is determined by entering soil and machine information. The destruction in soil with less moisture and more moisture than threshold is compared in this study. It is resulted that the rate of disturbance in dry soil is 0.72 cm. In each point each time the skidder passes and this rate is 1.37 cm for moist soil. Also it is concluded that the effect of skidders in dry soil is compaction and in moist soil, it is great disturbance in the soil horizons.

Keywords: Logging, Soil destruction, Moisture threshold